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THE CHURCH OF ST. MACLOU, AT ROUEN.

[View of the North Side of the Church of St. Maclou.]

The architectural antiquities of Normandy present objects of peculiar interest to the English traveller. From the period of the Conquest to the reign of Henry VI., Normandy and England were, with little interruption, under the same dominion; a continual intercourse was carried on by the people of each country; and hence there was a great similarity in the arts and customs of each, especially in their architecture. This similarity is very marked in the earlier specimens of Gothic buildings which exist in the two countries, in which there is scarcely any difference that can be considered national. But after the separation of Normandy from the crown of England, our architecture began to exhibit many innovations which are not to be found in the Norman edifices of the same period. Thus the church of St. Maclou, which was erected as late as the year 1512, presents none of those more striking deviations from the style of the two preceding centuries which became common in England after the reign of Edward IV., and are distinguished as the Tudor architecture. In this point of view the buildings of particular countries afford the most authentic monuments of their history, and thus possess an interest beyond the gratification which they afford by their beauty or vastness.

The western front of the church of St. Maclou is remarkable for a porch of three arches, somewhat resembling the great entrance of Peterborough Cathedral. The carved doors of the church are amongst its most beautiful ornaments. They are the work of Jean Goujon, an artist of such eminence as to have been named the 'Corregio of Sculpture.' The central tower of the church very nearly resembles that of the cathedral of Rouen, a work of much earlier date. Many parts of the interior have also this resemblance. Indeed the general character of this church would lead the casual observer to refer the date of its erection to the fourteenth century; but some peculiarities, such as the bosses of the groined roof, show to the antiquary that it belongs to the French architecture of the sixteenth century. The central tower was formerly surmounted by a spire of singular beauty; but this was greatly damaged by a hurricane in 1705, and was taken down thirty years afterwards.

The church of St. Maclou was not erected, as were most of the great Gothic buildings, out of royal or ecclesiastical resources. It was built by funds contributed by the people for the purchase of indulgences or permissions from the Archbishop of Rouen, to sin without penance, for forty and even a hundred days. The sale of indulgences at Rome was the principal exciting cause of that resistance to the Papal power which ended in the Reformation.

A SETTLER'S CABIN IN SOUTH AFRICA.

In former articles I have described our mode of travelling from the coast to the interior, the aspect of the glen allotted for our location, and our wars with the wild beasts with whom we had to contend for its possession. I shall now give a brief sketch of the first habitation which I erected on my own grounds, after our *location* had been subdivided, the united encampment of the party broken up, and the several families removed to their respective allotments.

The site which I selected for my residence was about three miles distant from my neighbours on either side; Mr. Rennie being on the stream above me, and Captain Cameron below, with rocky heights and clumps of shrubbery intervening. I selected an open grassy meadow, with a steep mountain behind, and the small river in front, bordered by willow-trees and groves of the thorny acacia. It was a beautiful and secluded spot; the encircling hills sprinkled over with evergreens, and the fertile meadow-ground clothed with rich pasture, and bounded by romantic cliffs crowned with aloes and euphorbias.

As the hut I was about to erect was only intended for a temporary residence, I adopted, with some variations, the mode practised by the natives in constructing their simple habitation. Drawing a circle on the ground of about eighteen feet in diameter, I planted, upright round this circle, about twenty tall willow-poles; digging, with an old bayonet, holes in the ground, just large enough to receive their thicker ends. I then planted a stouter pole exactly in the centre, and, drawing together the tops of the others, I bound them firmly to this central tree with thongs of quagga's hide. With the same ligature pliant spars or saplings were bound round the circle of poles, at suitable intervals, from bottom to top; and thus the wicker frame or skeleton of a cabin was completed, exactly in the shape of a bee-hive or sugar-loaf. It was then thatched with reeds, the ends of the first layer being let about a couple of inches into the earth. Spaces were left for a door and a small window; but neither fire-place nor chimney formed part of our plan. A convenient door, to open in two halves, was soon constructed of the boards of some packing cases; and a yard of thin cotton cloth stretched upon a wooden frame formed a suitable window.

With the assistance of my Hottentot servants I then proceeded to plaster the interior to the height of about six feet. The plaster was formed of fresh cow-dung mixed with an equal portion of sand, a composition almost universally in use in the interior of the Cape Colony, where lime is scarce and expensive, and where, from the dryness of the climate, this substitute serves for every ordinary purpose almost equally well. When the plaster was dry, the whole was washed over with a sort of size, composed of pipe-clay and wood-ashes diluted with milk, forming a handsome and durable greyish stone colour.

Thus secured externally, the next point was to lay a dry and firm floor below foot; and, in this, as in many other points, I thankfully received instruction from the Hottentots. Following their advice, I directed a dozen or two of large ant-hillocks, of which there were hundreds within view, to be broken up and brought into the hut, selecting those that had been previously pierced and sacked by the ant-eater, (*aardvark*,) and which were generally destitute of inhabitants. This material, from having been apparently cemented by the insect architects with some glutinous substance, forms, when pounded and sprinkled with water, a strong adhesive mortar, which only requires to be well kneaded with trampling feet for a few days in order to become a dry and compact pavement, almost as solid and impenetrable as stone or brick.

With the aid of my native assistants I had thus obtained a commodious African cabin, about eighteen feet in diameter, and nineteen feet high in the centre. In that serene and mild climate this was sufficient for shelter; but for comfort something more was necessary. Except cooking utensils, travelling-trunks, and some cases of books, I had brought with me nothing in the shape of furniture; nor was it possible to procure any nearer than Graham's Town, at the distance of 130 miles; and even then, such was the scarcity or the idleness of the mechanics, that one might probably be obliged to wait twelve months for the execution of an order, besides paying an extravagant price for very common articles. Luckily I had brought out a small assortment of carpenters' tools, and was not altogether unacquainted with the use of them; for I had been, when a boy, particularly fond of observing mechanics at work, and of amusing myself by cabinet-making on a small scale.

Diligently applying myself to the use of the hatchet, saw, and auger, and stimulated by necessity, "the mother of invention," I contrived, in the course of a few weeks, to have my little cabin commodiously and com-

pletely furnished. First I partitioned off from the outer apartment a small bed-room, so contrived, that, by drawing a curtain or two, it could be lighted and ventilated at pleasure. In this I constructed a bedstead; the frame being formed of stout poles of wild olive from a neighbouring thicket, with the smooth shining bark left on them; and the bottom to support the mattress, consisting of a strong elastic net-work of thongs of bullock's or quagga's hide interlaced. With similar materials I made a sofa for the outer apartment, which also served occasionally for a sleeping couch; together with the frame of a table, (the top being of yellow-wood plank,) a few forms and stools; and lastly an arm chair, which I considered my *chef-d'œuvre*. Not one of these, excepting the table, had the touch of a plane upon it. But they looked nothing the worse for that; and the cabin and its rude furniture had somewhat the aspect of a rustic summer house or grotto. My books, ranged high on a frame of spars over the bed-room, with a couple of firelocks slung in front, a lion's and leopard's skin or two stretched along the thatch above, with horns of antelopes and other country spoils interspersed, completed the appropriate decorations of my African cabin.

A few huts, of a similar but still ruder construction, were erected behind my own for the accommodation of my native domestics and herdsmen, and for a store-room and kitchen. When these and the folds for the flocks and herds were finished, the establishment was considered, for the time, complete. The work of inclosing, cultivating, and irrigating a portion of land for a garden, orchard, and corn crops was a task requiring much time and labour; but of which I shall now omit the details.

Suffice it to say, that in this "lodge in the vast wilderness," with no other inmates than my wife, and occasionally another female relative,—with only simple Hottentots for servants and dependents,—and in the midst of a wild region, haunted by beasts of prey, and occasionally by native banditti, (Bushmen and Caffre marauders from the eastern frontier,) I spent two years, which, though clouded by some disappointments and occasional privations, were, on the whole, among the pleasantest of my life. The disappointments we bore as we could; the privations we soon learned to laugh at. A specimen or two of the latter may serve to amuse the reader, and shall conclude my present sketch.

After we had got a competent share of live stock on our farms, and had brought a portion of soil under cultivation, we ran no risk of wanting the *necessaries* of life. We killed our own beef and mutton; we had milk, butter, and cheese; we reared abundance of poultry; we cultivated with success, potatoes, pumpkins, melons, all the ordinary esculent vegetables, and some not known in Europe. We learned from our Dutch-African neighbours to make our own soap and candles, and to manufacture from the skins of our sheep and goats, tanned with mimosa bark, excellent leather for jackets and trousers—and which supplied a sort of clothing well adapted for a country full of thorny trees and jungles. All that we had occasion to purchase, therefore, was a few *luxuries*—such as tea, coffee, sugar, wine, spices, &c. We usually got a sufficient quantity at a time, from Cape Town, or Algoa Bay, to last us a considerable period; but once or twice our store being exhausted before the new supply arrived, we found ourselves entirely destitute of the most important of these articles, tea, coffee, and sugar.

We were once subjected to a more serious privation. In the summer of 1822, we were visited by a severe drought, which endured for many months, and inflicted no small damage on our gardens and corn-fields. We had grain enough in store, however, and could dispense with fruit and vegetables. But at length our little river ceased to flow; and although we had enough of water in standing pools and fountains for ourselves and our cattle to drink, all the mills on the river being stopped for want of water, we could not get our wheat ground into flour, and were soon left without bread. As all our neighbours were nearly in the same situation, we could neither borrow nor purchase. Our Dutch-African neighbours and our Hottentot servants took the matter very quietly. They could live very well on mutton and boiled corn, they said, for a month or two, till rain fell. Indeed many of them in the arid country live entirely on animal food and milk, without either bread or vegetables. But it was different with us: we felt the want of *bread* a grievous privation. For a week or two we made a shift to grind a daily supply with our coffee mill; but this at length also failed. The iron handle was repeatedly broken; and though I had enough of smith's craft to repair it twice, the third fracture was beyond my skill; and we were then reduced to grind, or rather to bruise, our corn, by crushing a few grains at a time with a round stone upon a flat one. By this tedious process we procured a small cake or two daily; and with this we were forced to content ourselves, until we could obtain a supply of flour from a distance. This was a *real* privation: but, after all, I must not forbear to add, that these same cakes, baked of coarse meal ground between two stones, and occasionally of my own grinding, made the sweetest bread, I think, I ever tasted.

T. P.

ÆGINA.

"Why need we say that Ægina is one of the most celebrated of islands,—the native country of Æacus and the Æacidæ, which once enjoyed the dominion of the seas, and contended with Athens itself for the prize of superior glory in the battle with the Persian fleet of Salamis?"

Such are the emphatic words with which the ancient geographer, Strabo, introduces his elegant and accurate description of this remarkable island, which is situated in a beautiful gulf of the same name, slightly corrupted by the modern Greeks into Eg'hĭna. At the head of this deep gulf stands Cape Colonna, crowned with the fine columns of the temple of Minerva Sunias at the right; and, on the left, the bold rocky promontory of Skyli, the shores of Attica, of Megara, and of the Peloponnesus, all rising into hills of considerable elevation and of very picturesque forms, embrace the gulf, which, besides Ægina, is dotted with many small islands and rocks that group in the most picturesque manner.

The writer of this short notice had ample means of learning the beauty of the scene, which is one of the finest he saw on the coast of Greece; for, in the summer of 1827, he was detained three days at the mouth of the gulf of Ægina by dead calms and contrary winds. The whole of the shores of the Levant he visited are subject, in summer, to a silvery haze or mist, seen through the medium of which all objects have a deliciously delicate colour, and at times assume the most singular appearances,—the haze at sea producing something like the effects of the mirage in the deserts. One morning, on looking up the gulf from near Cape Colonna, he saw Ægina and all the other islets in view, suspended, as it were, in the air many feet above the level of the sea, while the surrounding mountains were striped here and there, from their summit to their base, with broad lines of white mist which appeared precisely like so many waterfalls.

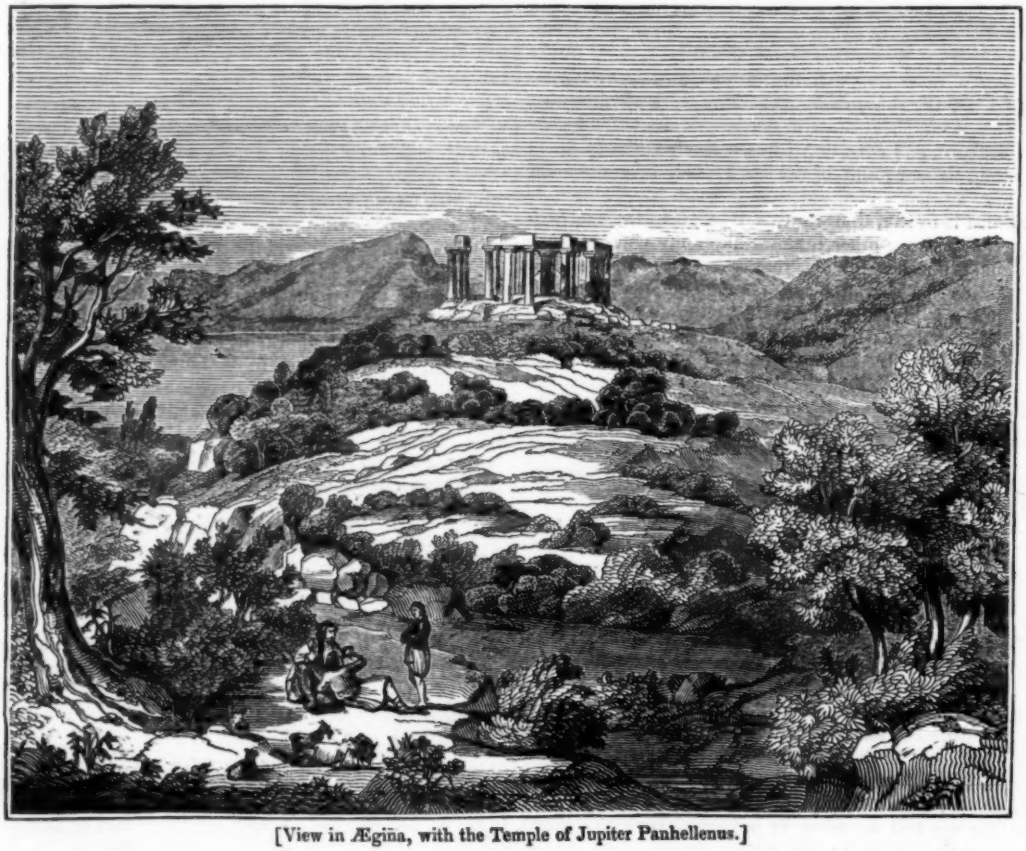
Towards evening this silvery haze entirely disappears; every object re-assumes its own form and position, and then indeed it is glorious to see—

"Along Morea's hills the setting sun."

At the time of the writer's stay there the whole of those seas were infested with piratical boats, manned by

Greeks who had been driven to robbery by starvation and despair, at what they then considered the utter neglect of them and their cause by all European nations; yet, though there might be danger in their approach, he could not sufficiently admire the beauty of their little vessels as they scudded across the gulf of Ægina or darted out from beneath Cape Colonna,—a beauty considerably increased by their generally having their sail-cloth dyed of a delicate red or rose colour.

The island of Ægina, one of the finest features in this scene, does not exceed nine miles in its greatest length, nor six miles in its greatest breadth; its interior is rough and mountainous, and the valleys, which are made to bear corn, cotton, olive and fruit trees, are narrow and stony. Yet in ancient days, through the blessings of commerce, this spot in the seas of Greece was the residence of a numerous and most thriving population, who erected upon it such works as are still the admiration of the civilized world, though they are now in ruins, and the place of those who built them scantily occupied by an impoverished and degraded race of men. The position of these islanders was favourable for trade. At the end of the gulf they were only separated from the Gulf of Corinth (now Lepanto) by a very narrow isthmus; and from the head of the gulf, sailing by Cape Colonna or Cape Skyli, their vessels had easy access to the whole of the Greek coast and clustering islands; and, standing across the Mediterranean, by an open navigation, could reach the rich and civilized island of Crete, and the ports of Egypt and Syria. The place had also the advantage of security; an important point in the earlier ages of Greece, when piracy was a common and honourable profession, and no defenceless town near the sea safe from plunder. It lay deep within a gulf; nature had made access to its shores difficult, by nearly encircling them with rocks and sand-banks; and its industrious population added artificial defences. Its port also was commodious and well protected against the attacks of man. Here, therefore, the goods procured, far and near, by the enterprising inhabitants could be lodged without fear of pillage, and the Greeks would resort hither as to a general mart, where whatever they wanted might be purchased. Wealth would thus flow into the island, and its inhabitants, with their exquisite feeling for all that was beautiful—a feeling the Greeks possessed above all other people we are acquainted with—would employ that wealth in cultivating the fine arts, and in covering their barren rocks with grand and graceful edifices.



[View in Ægiña, with the Temple of Jupiter Panhellenus.]

To the old inhabitants of Ægina are attributed the honours of having been the first to coin silver money, and of having introduced a style of art in sculpture, superior to all that preceded it, though inferior to the ultimate perfection of the Athenian or Attic school. Some antiquaries and connoisseurs are of opinion that they only shared the latter honours with Corinth and Sicyon; but however this may have been, Pausanias calls it exclusively the Æginetan, and the style seems to have borne the name of this people generally.

The reader will find in the *Penny Cyclopædia* a critical notice of this style of art, as also a plan and detailed description of the temple of Jupiter Panhellenus, with several other things excluded by our limits here. The engraving in this page is a somewhat distant view of all that remains of the celebrated temple just mentioned, which stands on the summit of a hill, rough and stony, and partially covered with mastic bushes, cedars, and fir trees. Anciently the hill also was called Panhellenium, from the temple that so nobly crowned it. "This temple," says Colonel Leake, "was erected upon a large paved platform, and must, when complete, have been one of the most remarkable examples in Greece of the majesty and beauty of its sacred

edifices, as well as of the admirable taste with which the Greeks enhanced those qualities by an attention to local situation and surrounding scenery. It is not only in itself one of the finest specimens of Grecian architecture, but is the more curious as being, in all probability, the most ancient example of the Doric order in Greece, with the exception of the columns at Corinth." The site of this sublime temple commands a prospect sublimer still.

Besides the Panhellenium, there still exist in Ægina two columns of a temple and several other ruins, which, however, are mere indications of what has been. The island is famous for its almonds and figs. Wild doves and wild pigeons are found in countless numbers, as they are round Cape Colonna and in all the neighbouring coasts and islands.

LINES,

[Composed a few miles above Tintern Abbey, on revisiting the Banks of the Wye during a Tour. July 13, 1798.]

Five years have past; five summers, with the length
Of five long winters! and again I hear
These waters, rolling from their mountain-springs
With a sweet inland murmur*.—Once again
Do I behold these steep and lofty cliffs,
That on a wild secluded scene impress
Thoughts of more deep seclusion; and connect
The landscape with the quiet of the sky.
The day is come when I again repose
Here, under this dark sycamore, and view
These plots of cottage-ground, these orchard-tufts,
Which at this season, with their unripe fruits,
Are clad in one green hue, and lose themselves
Among the woods and copses, nor disturb
The wild green landscape. Once again I see
These hedge-rows, hardly hedge-rows, little lines
Of sportive wood run wild; these pastoral farms
Green to the very door; and wreaths of smoke
Sent up, in silence, from among the trees!
With some uncertain notice, as might seem,
Of vagrant Dwellers in the houseless woods,
Or of some Hermit's cave, where by his fire
The Hermit sits alone.
These beauteous Forms,
Through a long absence, have not been to me
As is a landscape to a blind man's eye:
But oft, in lonely rooms, and 'mid the din
Of towns and cities, I have owed to them,
In hours of weariness, sensations sweet,
Felt in the blood, and felt along the heart;
And passing even into my purer mind,
With tranquil restoration:—feelings too
Of unremembered pleasure: such, perhaps,
As have no slight or trivial influence
On that best portion of a good man's life,
His little, nameless, unremembered acts
Of kindness and of love. Nor less, I trust,
To them I may have owed another gift,
Of aspect more sublime; that blessed mood,
In which the burthen of the mystery,
In which the heavy and the weary weight
Of all this unintelligible world,
Is lightened:—that serene and blessed mood,
In which the affections gently lead us on,—
Until, the breath of this corporeal frame
And even the motion of our human blood
Almost suspended, we are laid asleep
In body, and become a living soul:
While with an eye made quiet by the power
Of harmony, and the deep power of joy,
We see into the life of things.
If this
Be but a vain belief, yet, oh! how oft,
In darkness, and amid the many shapes
Of joyless daylight; when the fretful stir
Unprofitable, and the fever of the world,
Have hung upon the beatings of my heart,
How oft, in spirit, have I turned to thee,
O sylvan Wye! Thou wanderer thro' the woods,
How often has my spirit turned to thee!

And now, with gleams of half-extinguished thought,
With many recognitions dim and faint,
And somewhat of a sad perplexity,
The picture of the mind revives again:
While here I stand, not only with the sense
Of present pleasure, but with pleasing thoughts
That in this moment there is life and food
For future years. And so I dare to hope,
Though changed, no doubt, from what I was when first
I came among these hills; when like a roe
I bounded o'er the mountains, by the sides
Of the deep rivers, and the lonely streams,
Wherever nature led: more like a man
Flying from something that he dreads, than one
Who sought the thing he loved. For nature then
(The coarser pleasures of my boyish days,
And their glad animal movements all gone by,)
To me was all in all.—I cannot paint
What then I was. The sounding cataract
Haunted me like a passion: the tall rock,
The mountain, and the deep and gloomy wood,
Their colours and their forms, were then to me
An appetite—a feeling and a love,
That had no need of a remoter charm,
By thought supplied, or any interest
Unborrowed from the eye.—That time is past,
And all its aching joys are now no more,
And all its dizzy raptures. Not for this
Faint I, nor mourn nor murmur; other gifts
Have followed, for such loss, I would believe,
Abundant recompense. For I have learned
To look on nature, not as in the hour
Of thoughtless youth; but hearing oftentimes
The still, sad music of humanity,
Nor harsh nor grating, though of ample power
To chasten and subdue. And I have felt
A presence that disturbs me with the joy
Of elevated thoughts; a sense sublime
Of something far more deeply interfused,
Whose dwelling is the light of setting suns,
And the round ocean and the living air,
And the blue sky, and in the mind of man:
A motion and a spirit that impels
All thinking things, all objects of all thought,
And rolls through all things. Therefore am I still
A lover of the meadows and the woods,
And mountains; and of all that we behold
From this green earth; of all the mighty world
Of eye and ear, both what they half create,
And what perceive; well pleased to recognise
In nature and the language of the sense,
The anchor of my purest thoughts, the nurse,
The guide, the guardian of my heart, and soul
Of all my moral being.
Nor perchance,
If I were not thus taught, should I the more
Suffer my genial spirits to decay:
For thou art with me, here, upon the banks
Of this fair river; thou, my dearest Friend,
My dear, dear Friend, and in thy voice I catch
The language of my former heart, and read
My former pleasures in the shooting lights
Of thy wild eyes. Oh! yet a little while
May I behold in thee what I was once,
My dear, dear Sister! and this prayer I make,
Knowing that Nature never did betray
The heart that loved her; 'tis her privilege,
Through all the years of this our life, to lead
From joy to joy: for she can so inform
The mind that is within us, so impress
With quietness and beauty, and so feed
With lofty thoughts, that neither evil tongues,
Rash judgments, nor the sneers of selfish men,
Nor greetings where no kindness is, nor all
The dreary intercourse of daily life,
Shall e'er prevail against us, or disturb
Our cheerful faith, that all which we behold
Is full of blessings. Therefore let the moon
Shine on thee in thy solitary walk;
And let the misty mountain winds be free
To blow against thee: and, in after years,
When these wild ecstacies shall be matured
Into a sober pleasure, when thy mind
Shall be a mansion for all lovely forms,
Thy memory be as a dwelling-place
For all sweet sounds and harmonies; oh! then,
If solitude, or fear, or pain, or grief,
Should be thy portion, with what healing thoughts
Of tender joy wilt thou remember me,
And these my exhortations! Nor, perchance,
If I should be where I no more can hear
Thy voice, nor catch from thy wild eyes these gleams
Of past existence, wilt thou then forget
That on the banks of this delightful stream

* The river is not affected by the tides a few miles above Tintern.

We stood together; and that I, so long
A worshipper of Nature, hither came
Unwearied in that service: rather say
With warmer love, oh! with far deeper zeal
Of holier love. Nor wilt thou then forget,
That after many wanderings, many years
Of absence, these steep woods and lofty cliffs,
And this green pastoral landscape, were to me
More dear, both for themselves and for thy sake!

WORDSWORTH.

THE MOON.—No. 4.—(*Concluded.*)

THE average of a large number of observations, independently of the power which it gives us to detect laws unseen in the individual measurements, has also the advantage of destroying, in a great degree, the effect of errors of observation. The reason is obvious: let the instruments be ever so good, and the observer ever so attentive, each single measurement will be larger or smaller than the truth; and so long as there is no reason in the observer himself why he should commit a mistake rather on one side than the other, it is very unlikely that the sum of the defects in a great number of observations should differ much from the sum of the excesses. And whatever difference there may be, it is divided by the whole number of observations in taking the average.

The very allowable supposition here made is fully borne out by the whole history of astronomical observation. In the average of a large number of observations, all irregularity, if not destroyed, is detected, and its cause looked for, and in most instances discovered. For example, it is understood that at the Observatory of Greenwich the results of the transits of stars taken by different observers, all reductions being made, exhibit a slight difference, those of one particular observer being generally a little greater than those of another. The operation performed is simply noting the exact time by a clock at which a star passes over each of a succession of *wires* (thin spider's webs) seen in the telescope, and a practised observer generally makes an attempt to estimate each time noted by him, within one-tenth of a second. Each transit is the average of five such wires; so that whatever the total number of transits may be, taken by each observer, five times as many transits will have been taken at single wires. The average difference above mentioned is, we believe, not more than three-tenths of a second.

Now since an error of two-tenths of a second on one side or the other is possible at each wire, and generally some error does take place, we see the effect of a large number of observations in separating *uniform* from *accidental* errors, and detecting the former, even when accompanied by others nearly as large of the latter kind. We have introduced this instance to give the reader an idea of this principle, that small differences, though they tell nothing in single observations, are not to be neglected when they are found in the average of a great number; and the greater the number, the greater is the probability that a difference between two sets of observations arises from some definite and discoverable cause. If there be one instrument of which, more than of another, the indications appear to be capricious, and regulated by no law, it is the barometer. Nevertheless, it is found that the average height of the barometer is nearly the same in different years at the same place, and even in the same months of different years. In general, also, a low state of the barometer indicates rain: and this, though not by any means always true, is yet so far so, that of two large numbers of days in the first of which the barometer is, on the average, lower than in the second, it may be confidently expected that the first will contain more rainy days than the second. We shall now resume M. Arago's paper.

The following barometric observations were made by M. Flaugergues, at Viviers, from 1808 to 1828. They were made at noon, in order that, by choosing the same position of the sun throughout, the effect of the sun, if any, might not be mixed up with that of the moon. The observed heights of the barometer were then reduced to what they would have been if the mercury had been of the freezing temperature: so that all accidental variations of temperature produce no effect on the result. The heights are in *millimetres*, each millimetre being about one-twenty-fifth, or more correctly ·039371 of an inch.

Day of	Average Height. mm.	Day of	Average Height. mm.
New moon.....	755·48	Full moon .....755·30	
First octant	755·44	Third octant .....755·69	
First quarter	755·40	Second quarter....756·23	
Second octant ...	754·79	Fourth octant.....755.50	

These results, though near to each other, are much beyond what could arise from errors of observation; the greatest difference between them being about a millimetre and a half—a mistake which could not be made by a careful observer even in a single observation, far less in the average of a large number. From this table we find that the barometer is lowest on the average at the second octant, and highest at the second quarter—a result which agrees with that of M. Schübler, given in our last Number, namely, that there is most rain at the octant, and least at the second quarter.

M. Flaugergues has also confirmed the results of M. Schübler in another point. He has found that the average height of the barometer on those days when the moon is farthest from the earth, is $755^{mm}\cdot73$; while on the days on which the moon is nearest to the earth, it is $754^{mm}\cdot73$; the difference being exactly 1^{mm}. M. Schübler's result is, that it rains less on the former days than on the latter.

But we have yet two striking results in corroboration of those of the table already cited. From the table of M. Flaugergues, just given, we find the average height at the quarters to be $755^{mm}\cdot81$, and that of the heights of the new and full moon to be $755^{mm}\cdot39$; the difference being $0^{mm}\cdot42$, or 42 hundredths of a millimetre. From a long series of observations made at Padua by the Marquis Poleni, it appeared that the mean height at the quarters exceeded that at the new and full moon by $0^{mm}\cdot46$, or 46 hundredths of a millimetre; and from observations made by M. Bouvard at Paris, it appears that there the average at the quarters still exceeds that at the new and full moon, but by a greater quantity, viz., 69 hundredths of a millimetre. All these results were obtained from long series of observations; but from some observations made during a *single* year at Santa Fé de Bogota, they were, as would have appeared beforehand highly probable, confirmed in some points and not in others. The barometer was highest at the last quarter, but the average height of the quarters was *less* than that at the new and full moon.

With these facts before us, we cannot avoid coming to the conclusion, that the average state of the weather as well as of the barometer, for different times of the lunar month, exhibits variations which cannot be accounted for as the effect of accident or errors of observation. *Accidents* there are none; and when we say that an event is accidental, we mean that its connexion with other events is unobserved or unknown, not *unexisting*. Errors of observation could not give such uniform and corresponding results, from different observers, in different places and at different times, looking at different phenomena. The barometrical observations are far more convincing than those of the number of rainy days, since the height of the barometer is capable of mathematical measurement, while the definition of a rainy day depends in some degree upon the observer's judgment. It must also

be observed, that there is nothing in the above observations which presents any remarkable phenomena at the *changes* of the moon. It is true that the days of those changes were chosen for the periods of observation, not only because they have definite names, and are more commonly known than the other days of the lunar month, but also because there are considerations which render it probable that if the barometer vary its average height with the moon, the greatest, and therefore most easily observable variation, would take place at or near one of these changes. The popular opinion is, that changes of weather are always, or nearly always, to be expected at the change of the moon, particularly at the new and full. What is meant by a *change of weather* is very uncertain, so that any one can deceive himself and others by calling attention to every remarkable change which really does happen to take place at these periods, while it will be hard if, in the forty-eight hours next following a change, something does not take place, in the shape of wind, rain, or sunshine, sufficient to keep the theory in countenance, and its advocates in conceit of it.

The first set of observations cited by M. Arago on this subject, are those of M. Toaldo, at Padua, continued through nearly half a century. Their result is apparently highly favourable to the popular opinion. The observer himself was strongly biassed in favour of the common theory; and even went further, for he says that every one is aware, from his own experience, that the nails and hair grow much more quickly when cut during the increase of the moon, than when cut during the wane! The following is the result of his observations.

Epoch.	Proportion of such epochs at which changes take place.
New moon	6 out of 7
Full moon	5 „ 6
First quarter	2 „ 3
Second quarter	2 „ 3
Moon nearest to earth	5 „ 6
Moon farthest from earth	4 „ 5

If this were a real representation of the facts which occurred, and if M. Toaldo had clearly explained what constituted a change of weather in his opinion, there can be no doubt that the matter would be rightly considered as settled in favour of the common opinion. But M. Toaldo presumes and applies a theory in the formation of his observations. Supposing that the new and full moon exercise a particular influence superior to any other phases, he counts any change which happened either the day before or after those epochs, and puts it down as happening *at* the full or new moon; he sometimes reckons two days before and after the phase in the same way. On the other hand, at the quarters, which he imagined to have less influence on the weather, he counts only what happened in the twenty-four hours in which the phase occurred; that is, he gives the full and new moon always three and sometimes five days in which to catch a change of weather, and only one to the quarters. It yet remains to be seen whether, if he had given the latter five or three days and the former only one, his results would not have been exactly reversed.

Another opinion of M. Toaldo, that the quantity of rain which falls in any period of nine years is the same as that in any other similar period, or nearly so, is shown by M. Arago not to agree even with the results of his own tables, and not at all with observations made at Paris.

But the observations of M. Toaldo are directly contradicted by those of others, of whom M. Arago cites M. Pilgram and Dr. Horsley. The former made twenty-five years of observations at Vienna, from 1763 to 1787, and his results are as follows, the first column specifying the phase, and the number in the second showing how often *per cent.* that phase was accompanied by change of weather:—

1. New moon	58
2. Full moon	63
3. Quarters	63
4. Moon nearest to earth (generally)	72
5. Moon farthest from earth (do.)	64
6. Moon nearest to earth at new moon	80
7. Moon farthest from earth at new moon	64
8. Moon nearest to earth at full moon	81
9. Moon farthest from earth at full moon	68

From these observations we should imagine that fewer changes take place at the new moon than at any other phase, and that there are as many changes at full moon as at the quarters, which is directly in opposition to the results of M. Toaldo. M. Arago, not having the original work of Pilgram before him, could not say anything of his method of observing, or of his definition of a change of weather. He therefore examines the preceding results to see if they be consistent with one another; and here he immediately finds a remarkable inconsistency. If we take the preceding table as proving that the place of the moon affects the weather, it is clear we must say that, *cæteris paribus*, the farther the moon is from the earth the less that action is. (Compare 4 and 5, 6 and 8, 7 and 9.) We must therefore conclude that the least action of the *full* moon gives 68 *per cent.* (see 9) for the number of changes, for this is the number it would give in the most unfavourable circumstance. But it appears (see 2) that the whole action of the full moon gives 63 per cent. of changes,—that is, all the full moons together, on the average, indicate less action than that indicated by a selection of the most unfavourable cases only. This appears to us to prove, either that the observations were badly made, or that the connexion of the phases of the moon with changes of weather is, if any, of so trivial a nature, that twenty-five years of observation are not sufficient to detect and separate the effect of the moon from that of other causes.

The observations of Dr. Horsley, though only for two years, 1774 and 1775, yet exhibit results very little indicative of any truth in the common notion. In 1774, *two* new moons only, and *not one* full moon, were accompanied with changes of weather. In 1775, four new moons, and three full moons only, took place at a change.

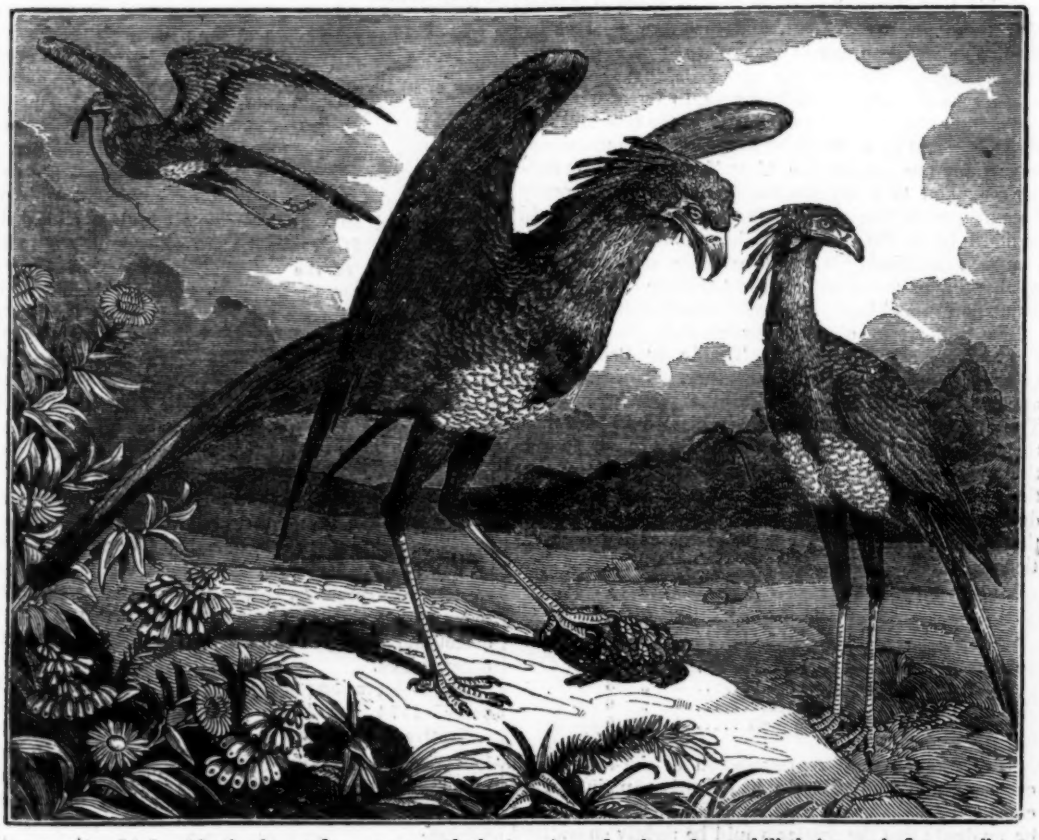
M. Arago ends by some account of various notions which have prevailed with regard to lunar influence. For example, that if the horns of the moon be sharp on the third day, the month will be fine; if the upper horn of the moon appears dusky at setting, it will rain during the wane of the moon; if the lower horn, it will rain before the full; if the centre, it will rain at the full moon; if shadows be not visible from the moonlight when it is four days old, there will be bad weather. It has been thought, also, that the April moon has considerable influence on vegetation; and that if trees are cut down during the increase of the moon, the wood will not keep. The old forest laws of France forbid the cutting of wood, except during the wane of the moon, for this reason; and M. de St. Hilaire found the same idea among the natives of Brazil. The Italian wine-makers are of opinion that wine made during two moons, that is, one month and part of another, will not be good. It has been said that moonlight renders substances moist and promotes putrefaction. This is in one sense true, since moonlight nights, that is, *clear* nights, are more favourable than others for the formation of dew, and moist substances decay sooner than dry ones.

The influence, or the supposed influence, of the moon on the human body, and how long it has retained its place in our almanacs, are well known. M. Arago cites several cases in which that planet is said to have produced singular effects. For example, Ramazzini, an Italian physician, stated that in 1693 many persons who were attacked by an epidemic disorder died at the exact time of an eclipse of the moon. This is very possible;

nor is it at all to be wondered at, that imagination might produce such effects in an age when people of the highest rank would shut themselves up in a dark room during an eclipse, by the advice of their physicians, to escape from some supposed evil influence.

Our limits prevent us from giving any more instances. We hope what we have said may help to draw a distinction in the minds of some of our readers between facts established by attentive observation, and the relics of an absurd system of philosophizing.

THE SECRETARY BIRD.



THIS singular bird, with the legs of a crane and the head of an eagle, of which a characteristic representation is given in the above wood-cut, is an inhabitant of the southern parts of Africa. His presence there is a peculiar blessing to the natives; for they are indebted to him for the destruction of a vast quantity of insects and reptiles, whose multiplication, unless their numbers were thus kept down, would be a formidable calamity. The bird has been called by the names of secretary, messenger, archer, and lastly serpent-eater. The latter name truly indicates his habits;—the former are mere fanciful appellations. The first is derived from an imaginary resemblance of the bunch of long feathers that hang loose on the back of his head, to a pen stuck in the ear of a writer; the second refers to his rapid strides; and the third to a habit which he possesses of throwing straws with his beak something in the manner of an arrow from a bow. He is still best known by the name of the Secretary.

The Secretary belongs to the class of rapacious birds, and he is now placed by naturalists between the vultures and eagles. He was formerly classed among the wading birds, on account of the length of his legs. His conformation, as well as his habits, attest the correctness of the more recent classification. The Secretaries, like the other large birds of prey, build their nests on the tops of the highest trees. They seek their food both on the dry sands and the pestiferous marshes. On the one they find serpents and lizards; in the other tortoises and large insects. Their mode of destroying life is very curious, for they always kill their prey before swallowing it. Whether the Secretary meet with a serpent or a tortoise, he invariably crushes it under the sole of his foot; and such is the skill and force with which he gives the blow, that it is very rarely that a serpent of an inch or more in diameter survives the first stroke. When he meets with a serpent that is large enough to oppose a long resistance to him, he flies off with his prey in his beak to a great height, and then dropping it, follows it in its descent with wonderful rapidity, so as to be ready to strike it when it falls stunned on the ground. M. le Vaillant describes an obstinate battle between a secretary and a large serpent, in which the bird struck his enemy with the bony protuberance of his wing; but the mode of crushing with his foot is the more common.

The male and female equally labour in the construction of their large nest, in which the female generally lays two eggs. Their unions do not take place till after the most obstinate battles amongst the males. In general these birds exhibit no fierceness, and they are easily domesticated. Their natural habits must be of singular advantage to man in places where reptiles abound; and for this reason the French have endeavoured to establish the Secretary in their colonies of Guadeloupe and Martinique.

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